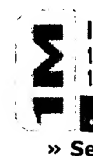


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1 Contract-Checking Wrappers for C++ Classes

Edwards, S.H.; Sitaraman, M.; Weide, B.W.; Hollingsworth, J.;
 Software Engineering, IEEE Transactions on , Volume: 30 , Issue: 11 , Nov. 2
 Pages:794 - 810

[\[Abstract\]](#) [\[PDF Full-Text \(2128 KB\)\]](#) **IEEE JNL**
2 Design of multi-invariant data structures for robust shared accesses multiprocessor systems

I-Ling Yen; Bastani, F.B.; Taylor, D.J.;
 Software Engineering, IEEE Transactions on , Volume: 27 , Issue: 3 , March 2
 Pages:193 - 207

[\[Abstract\]](#) [\[PDF Full-Text \(276 KB\)\]](#) **IEEE JNL**
3 Representation inheritance: a safe form of "White box" code inheritance

Edwards, S.H.;
 Software Engineering, IEEE Transactions on , Volume: 23 , Issue: 2 , Feb. 199
 Pages:83 - 92

[\[Abstract\]](#) [\[PDF Full-Text \(180 KB\)\]](#) **IEEE JNL**
4 Optimizing memory accesses for spatial computation

Seth, M.B.; Goldstein, S.C.;
 Code Generation and Optimization, 2003. CGO 2003. International Symposium
 on , 23-26 March 2003
 Pages:216 - 227

[\[Abstract\]](#) [\[PDF Full-Text \(511 KB\)\]](#) **IEEE CNF**

5 Representation inheritance: a safe form of "white box" code inheritance*Edwards, S.H.;*

Software Reuse, 1996., Proceedings Fourth International Conference on , 23-27 April 1996

Pages:195 - 204

[\[Abstract\]](#) [\[PDF Full-Text \(840 KB\)\]](#) **IEEE CNF****6 Refining object-oriented invariants and dynamic constraints***Shield, J.; Hayes, I.J.;*

Software Engineering Conference, 2002. Ninth Asia-Pacific , 4-6 Dec. 2002

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[\[Abstract\]](#) [\[PDF Full-Text \(262 KB\)\]](#) **IEEE CNF**

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Proceedings of SPIE -- Volume 1767

Inverse Problems in Scattering and Imaging, Michael A. Fiddy, Editor, December 1992, pp. 13-20

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Zhiming Sun and James P. Coronas

Iowa State Univ. (USA)

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Enabled Rdb AIJs causes BAS-F-MEMMANVIO in PowerHouse call to External Product

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author

[Frederick Hoenisch](#)**subject: Enabled Rdb AIJs causes BAS-F-MEMMANVIO in Pow
call to External Product**

Dec 24, 2004 16:56:16 GMT

After waiting for a patch and upgrading to Oracle's Rdb product to v 241, we re-enabled After Image Journaling (AIJ) on one of our data

When users perform a particular function (called an assessment) fr PowerHouse (PH) screen they would intermittantly get a stackdump "BAS-F-MEMMANVIO, memory management violation". This proble to increase in frequency as system loading increases.

After some investigating/head scratching we tried turning off AIJs (c left that we felt we changed) and the problem stopped.

We've recompiled the PowerHouse code which links to an external (address/postal code checking software) and get the same problem

We've opened calls with the three vendors for advise:
COGNOS (PH)
ORACLE (Rdb)
COMDATA (PC Lookup)

COMDATA provided me with some source code with some additior checking within the code to help us narrow down the problem. I rec under BASIC 1.5 with the /CHECK=ALL qualifier. The resulting .OB recompiled into the PowerHouse routine and our latest attempt to ti yielded the following:

```
%BAS-F-MEMMANVIO, Memory management violation
-BAS-I-USEPC_PSL, at user PC=80C981A4, PSL=0000001B -SY$
ACCVIO, access violation, reason mask=04, virtual address=0000C
-BAS-I-FROLINSUB, from line 2999 in subprogram MMPREP %TR
TRACEBACK, symbolic stack dump follows
image module routine line rel PC abs PC
0 FFFFFFFF80C9A984 FFFFFFFF80C9A984
DEC$BASRTL 0 000000000000EF9C 000000007C1D8F9C
----- above condition handler called with exception 0000000C: %SY
ACCVIO, access violation, reason mask=04, virtual address=0000C
----- end of exception message
0 FFFFFFFF800A609C FFFFFFFF800A609C
0 FFFFFFFF80C981A4 FFFFFFFF80C981A4
QKDRIVER MMPREP MMPREP 1218 0000000000005834
00000000001122D4
```

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```
0 FFFFFFFF80C9A894 FFFFFFFF80C9A894 QKDRIVER DRIVEF
call_external
7563 00000000000000664 000000000000506C4 QKDRIVER DRIVE
driver_mainline
1318 0000000000000048 00000000000050048
0 FFFFFFFF8026FE94 FFFFFFFF8026FE94
```

Here's an extract of the MMPREP routine from line 2999 (provided permission from COMDATA):

```
2999 EXTRA_INFO$ = EDIT$(EXTRA_WORK$,8% + 128%) ! STR
LSET MMISER_OUTREC_NONADDRESS = EXTRA_INFO$
IF TRACE$ = 'Y' THEN
PRINT 'LEAVING MMPREP ';MMISER_OUTREC_NONADDRESS
PRINT ' ADDRESS 1 ';MMISER_INREC_ADDRESS1
PRINT ' ADDRESS 2 ';MMISER_INREC_ADDRESS2
END IF
```

```
IF EXTRA_INFO$ <> SP THEN
LSET MMISER_OUTPAR_ERRORTTEXT(0%) = '86 Extra Informati
ELSE
IF EDIT$(MMISER_INREC_ADDRESS1 + '' + &
MMISER_INREC_ADDRESS2,16%+32%+128%) <> &
EDIT$(ORIG_ADDR1$,16%+32%)
THEN
LSET MMISER_OUTPAR_ERRORTTEXT(0%) = '80 Abbreviation'
END IF
END IF
```

! RESET PASSING PARAMETERS

```
INPAR$ = MMISER_INPAR_WHOLE
INREC$ = MMISER_INREC_WHOLE
OUTPAR$ = MMISER_OUTPAR_WHOLE
OUTREC$ = MMISER_OUTREC_WHOLE
```

GOTO 32767

Note: We've checked quotas as well and they appear to be adequate (as reported from PQUOTA utility).

Typical user's quotas are as follows:

```
Maxjobs: 0 Fillm: 8192 Bytm: 1500000
Maxacctjobs: 0 Shrfillm: 0 Pbytm: 0
Maxdetach: 0 BIOlm: 100 JTquota: 4096
Prclm: 6 DIOlm: 200 WSdef: 1024
Prio: 4 ASTlm: 206 WSquo: 20000
Queprio: 0 TQElm: 50 WSextent: 70000
CPU: (none) Enqlm: 32767 Pgflquo: 1500000
```

Any thoughts/comments would be appreciated.

VMS 7.3-2
Rdb 7.1-241
PH 7.10G1

The PC_LOOKUP product hasn't had any program updates for a number of years.

Yours truly,
Fred.

Note: If you are the author of this question and wish to assign points to any of the answers, login first. For more information on assigning points, click [here](#)

Sort Answers By: Date

Robert Gezelter

Dec 24, 2004 17:03:47 GMT 0 pts



Fred,

Does the program fault in the same place every time?

- Bob Gezelter, <http://www.rlgsc.com>

Frederick Hoenisch

Dec 24, 2004 17:08:24 GMT N/A: Question Author

Yes, but because it is a production application, we didn't have many opportunities to test, before disabling AIJs.

Of the failures - all were at the same point.

Robert Gezelter

Dec 24, 2004 17:25:48 GMT 6 pts



Fred,

Personally, I would probably set things up so that I could single step program at a machine code or source code level to determine EXAI call, and what parameter it is having a problem with. As a start, check at the address 80C981A4, which would appear to be in system space. In a glance, it seems unlikely that an AIJ issue would produce a synchronous problem, one that occurs at exactly the same place every time.

I would really want to get the debugger on it and see exactly which to which routine is causing the problem. Otherwise, we are working speculation, not facts.

- Bob Gezelter, <http://www.rlgsc.com>

Robert Gezelter

Dec 24, 2004 17:27:54 GMT 6 pts



Fred,

A followup thought. A quota related issue could produce a timing in problem. In any event, the debugger would allow precise identification of the problem.

- Bob Gezelter, <http://www.rlgsc.com>

Garry Fruth ★

Dec 24, 2004 17:58:24 GMT 7 pts

I suggest you add a line number to every statement; this may help to a single statement. E.G.

```
2999 EXTRA_INFO$ = EDIT$(EXTRA_WORK$,8% + 128%) ! STR
29991 LSET MMISER_OUTREC_NONADDRESS = EXTRA_INFO
29992 IF TRACE$ = 'Y' THEN
29993 PRINT 'LEAVING MMPREP ';MMISER_OUTREC_NONADDRESS
29994 PRINT ' ADDRESS 1 ';MMISER_INREC_ADDRESS1
29995 PRINT 'ADDRESS 2 ';MMISER_INREC_ADDRESS2
29996 END IF
```

...

Line numbers do not need to be sequential nor in order; but they do

unique. The compiler should let you know about duplicates.

I suspect the accvio occurs in the four lines that "RESET PASSING PARAMETERS". If the calling program passed fixed-length string b rather than using dynamic strings (I think my terminology may be a this), then changing the length of what is passed may not be legal.

Frederick
Hoenisch

Dec 24, 2004 19:47:54 GMT N/A: Question Author

Thank you for the responses thus far. I failed to mention that our att duplicate the problem in our non-production environments all failed.

Because the problem only shows itself when the system is busy, I t discuss with the Application Manager the possibility of trying to deb problem during prime time (this is unlikely).

PowerHouse has a debugger, but we're not sure (at this point) if it v debug the external calls (BASIC code)? Something to try and exper over the holidays I guess.

Volker Halle



Dec 25, 2004 11:50:02 GMT 7 pts

Fred,

consider to issue a SET PROC/DUMP/ID=xxx against a process ru BASIC image, before invoking the problematic user function. Once ACCVIO happens, you'll get a process dump (SYSS\$LOGIN:imagen which can be analyzed by ANAL/PROC. You can do analysis of the a non-realtime environment first. You can find the failing instruction stack leading to the problem and look at the memory contents being etc.

To make sure, that a complete process dump (including process-pe from system space) can be written, you may want to (temporarily) g IMGDMPS\$READALL right to the user running the application.

Trying to analyse the problem in 'real-time' may be different, espec ACCVIO is dependant on system load. You'll never know, whether : problem. It may even be impossible to reproduce it with running the

Volker.

Volker Halle



Dec 25, 2004 12:51:47 GMT 7 pts

Fred,

could you also try the following, please:

If we believe the PC value reported by BAS-I-USEPC_PSL, you can following SDA command on the system, where this problem had ha

```
$ ANAL/SYS
SDA> EXA/INS 80C981A4
```

As the RM (Reason Mask) has been reported as 04 (=WRITE), the DESTINATION address pointed by the instruction producing the AC must point to non-writeable memory.

```
SDA> MAP 80C981A4
```

may also tell, which execlet/image/library this code is in.

If the reported instruction, registers etc. make sense, try SDA> EXA 80C981A4-20;20 to find out, where the 'invalid' value (probably 000

which is the failing VA reported in the ACCVIO) in the register may loaded from.

Volker.

Volker Halle



Dec 25, 2004 19:22:04 GMT 7 pts

Fred,

from experimenting with a little BASIC test program:

```
0 FFFFFFFF800A609C FFFFFFFF800A609C <<<
SYS$CALL_HANDL_C+0002C
0 FFFFFFFF80C981A4 FFFFFFFF80C981A4 <<< failing instruction
QKDRIVER MMPREP MMPREP 1218 0000000000005834
00000000001122D4
```

Source code line 1218 in the MMPREP module seems to be the last executed in this module before calling a routine in system space, with the ACCVIO at PC 80C981A4. Finding this line requires a source code from the version of the module running at your site.

PC 1122D4 must be a return address (following a JSR instruction).

Taking a process dump from a failing BASIC program works fine. With a process dump, you have all the information you need to figure out, which instruction is failing due to which invalid address in which register.

Volker.

David Sneddon



Dec 26, 2004 01:37:20 GMT 7 pts

Fred,

As a longtime user of BASIC, my first instinct on the info you supplied would be to increase pgflquo (try doubling it).

Regards
Dave

Frederick
Hoenisch

Jan 4, 2005 19:49:46 GMT N/A: Question Author

Thanks again All:

The next opportunity to test is this weekend and the first 'load' test in the morning.

I'll give it a go and let you know. Thanks for the advice. For the next time I intend to:

1. Double PGFLQUO for all users of the app.
2. Generate PROCESS dump files.
3. Add more line numbers to MMPREP.

Yours truly,
Fred.

Ian Miller



Jan 5, 2005 10:11:01 GMT unassigned

could there be an issue with the location of the AIJ which is badly handled? It leads to the ACCVIO. Is the AIJ file placed on a disk on which there is free space and that the file and the file and directory protection are set correctly?

David Sneddon

Jan 5, 2005 10:34:35 GMT unassigned



Ian,

I think the AIJ stuff probably requires some memory that is blowing the pgflquo value. I have seen our developers make "small" changes like allocating a new 10000 element string array and suddenly the application falls over with ACCVIO errors. Increasing pgflquo makes it go away. The fact that Fred can't reproduce it in a test environment suggests that the quotas in the test environment are probably different to the production environment.

Dave

Ian Miller



Jan 5, 2005 10:39:53 GMT unassigned

Dave, you are correct that quotas are the first thing to suspect. I was wondering about other possible causes.

David Sneddon



Jan 5, 2005 10:54:35 GMT unassigned

Yes it may be something else but all MEMMANVIO errors I have seen over the years have been either pgflquo issues or recursive/circular calls not terminating (ending up in stack overflows). Failure to create/rename files due to insufficient contiguous space for directories usually manifest as ACP type errors.

Dave

David Sneddon



Jan 5, 2005 10:58:30 GMT unassigned

Having just re-read the original and the comment about things breaking when the load increases, is it possible that there is insufficient pagefile available? Are there now more users than there used to be?

Jan van den Ende



Jan 5, 2005 12:20:51 GMT unassigned

Fred,

Having read and re-read the whole stream, I am still quite in doubt as to the point for you or not, but since I found no definitive argument out, I will just relate our experience (and workaround).

We first stumbled on it when we tried to implement Clusterwide Log

In ANY area definition in Rdb (and also DBMS), internally the logics are evaluated up to the level where a physical or a Concealed Device A Concealed device is then tested to be valid - explicitly - in LNM\$SYSTEM_TABLE; EXECUTIVE mode.

Should somehow a reference be made to a data area that does NOT then an Access Violation is generated. How that would trickle down Powerhouse is unknown to me.

Oracle was able to confirm our findings (back in february 2000), and support for clusterwide tables 'in the next release'. We have since but it not yet repaired in any following release...

As I started this post with, it might have nothing to do with your problem might well be worth checking.

Proost.

Have one on me.

Jan

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D - assert(Object)

Ads by Goooooogle

Wed, 17 Mar 2004 14:20:43 -0500 Vathix <vathix xx dprogramming.com> writes:

```
Object o;
assert(o);
```

Instead of making sure "o" is a valid reference, it causes an access violation when trying to run its invariant. I think it should check for null first; it makes it easier, and would do what most newbies expect.

--
Christopher E. Miller

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Thu, 18 Mar 2004 16:31:03 -0800 "Walter" <walter xx digitalmars.com> writes:

"Vathix" <vathix xx dprogramming.com> wrote in message
news:c3a8eb\$304f\$1 xx digitaldaemon.com...

```
> Object o;
> assert(o);
>
```

```
> Instead of making sure "o" is a valid reference, it causes an access
> violation when trying to run its invariant. I think it should check for
> null first; it makes it easier, and would do what most newbies expect.
```

An access violation is an exception, and if the invariant fails an exception is also thrown. All an access violation is is the hardware checking for the error rather than checking for it with software.

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Fri, 19 Mar 2004 07:24:51 -0500 Vathix <vathix xx dprogramming.com> writes:

Walter wrote:

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> news:c3a8eb$304f$1 xx digitaldaemon.com...
```

```
>
>>Object o;
>>assert(o);
>>
>>Instead of making sure "o" is a valid reference, it causes an access
>>violation when trying to run its invariant. I think it should check for
>>null first; it makes it easier, and would do what most newbies expect.
>
>
> An access violation is an exception, and if the invariant fails an exception
> is also thrown. All an access violation is is the hardware checking for the
> error rather than checking for it with software.
>
```

I just mean it'd be nice if `assert(o)` translated into `assert(o != null && o.invariant())` instead of just `assert(o.invariant())` so it works more like an `if(o)` statement. It's in debug mode so the extra check shouldn't be important. It's not a big deal, as I've gotten used to typing `assert(o != null);` -- it's easier than running the program through the debugger.

--

Christopher E. Miller